

REMARKS

Claims 33 and 34 have been amended to describe angstroms instead of nanometers, as discussed at 0038. Claim 37 has been cancelled. Claim 1 has been amended to describe a bare silicon surface, as described at 0003 and 0045. Claims 13 and 38 have been amended to describe an uncoated or bare surface. Since silicon oxidizes in the presence of air, a bare or uncoated surface may be an oxidized silicon surface. Claim 38 has been further amended to correct the description of anhydrous HF gas, as set forth at 0039 and 0040.

Pursuant to Rule 1.56, Applicant advises that claims in 10/975,194 having some of the same steps as the present pending claims were rejected for double-patenting over 10/631,376 and 10/917,094, and as anticipated by Wong, U.S. Patent No. 5,423,944 and EP 782 177.

A Terminal Disclaimer disclaiming over Application No. 10/917,094 is enclosed along with the filing fee.

Regarding the Section 102(e) rejections at pages 8-9 of the 10/03/2005 Office Action, the entire description in DeGendt et al DeGendt *et al.*, USP 6,551,409, is directed purely to removing organic contaminants on a wafer. See Column 3, lines 45-53. There is no suggestion in DeGendt *et al.*, of removing any of the silicon wafer material. As amended, claims 1, 13, and 38 operate on a bare silicon surface (or oxidized surface) of a wafer. In these claims, there is no photoresist or other coating on the wafer, as in DeGendt *et al.*

Amended Claim 1 is not anticipated by DeGendt *et al.* because DeGendt *et al.* clearly does not relate to wafer thinning at all. DeGendt *et al.* is also unrelated to

any process following back-grinding or plasma etching, as in amended claims 34 and 36. Indeed, DeGendt *et al.* does not mention back-grinding or wafer thinning. And the DeGendt *et al.* processes are described as a favorable alternatives to plasma etching. Col. 2, lines 1-12.

DeGendt *et al* also does not inherently anticipate the claims. Even if the DeGendt *et al* immersion or moist vapor processes were continued after all of the organic (e.g., photoresist) layer was removed, there is nothing to suggest that these processes would continue on and remove silicon from the wafer. Initially, silicon would be slower to remove than photoresist. And the process rates in DeGendt *et al*, even for photo-resist, (5 nm in 1 minute, Col. 6, lines 27-34; and 1.2 nm in 10 minutes, Col. 6, lines 61-63) are far below what is needed for a useful thinning process (e.g., the 100 nm/minute rate of claim 33).

DeGendt *et al* in addition provides no disclosure of the role of HF. Rather HF is merely listed in DeGendt *et al* as one of six possible additives to the rinse fluid (Col. 4, lines 25-30 and lines 60-62), or as one of six possible additives to the gas mixture (Col. 8, lines 2-3). This clearly demonstrates that in DeGendt *et al*, the HF plays no role in removing photo-resist—since the DeGendt *et al* process is described as working without HF. Consequently, DeGendt *et al* cannot reasonably suggest to a person of skill in the art that HF would be useful for wafer thinning, as claimed, since in DeGendt *et al*, HF is not even needed for removing photoresist.

Turning now to the rejections at pages 9-14 of the 10/03/2005 Final Office Action, the newly applied Torek *et al.* patent (No. 6,758,938) also does not disclose

wafer thinning. Torek *et al.* concerns only surface preparation, e.g., cleaning, etching and stripping. Column 1, lines 6-9. Torek *et al.* does not mention HF at all.

Responsive to the comments at page 11 of the 10/03/2005 Final Office Action, paragraph 83 of the DeGendt *et al.* published application US 2002/0011257 A1 refers to a process for removing plasma etch residue, not wafer thinning.

The Examiner's conclusion at the middle of page 13 of the 10/03/2005 Final Office Action is that:

"Torek *et al.* in combination with DeGendt *et al.* or EP '177 as discussed supra do not teach reducing the thickness and the rate of etching as claimed."

Applicant fully agrees with this conclusion. Kenny *et al.* (US 2004/0103919), the fourth reference in the combination, is commonly owned with the present application, as set forth in the statement below. Accordingly, Kenny *et al.* is not prior art under sections 103 or 102(e). Claims 13-18, 20-24 and 26-41 are not obvious over the remaining three references of the combination (Torek *et al.*, DeGendt *et al.*, and EP 782 177) applied against these claims, because none of these three references ". . . teach reducing the thickness and the rate of etching as claimed."

STATEMENT OF COMMON OWNERSHIP

Application No. 10/721,495, published as US 2002/0011257 A1 (Kenny *et al.*) and the present Application No. 10/631,376 were, at the time the invention of Application No. 10/631,376 was made, owned by Semitool, Inc.

In view of the foregoing, it is submitted that the claims are in condition for allowance. A Notice of Allowance is therefore requested.

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